

11 Jan 1963

Memo for Record

Subject: "Falling Leaves"

11 Jan 1963

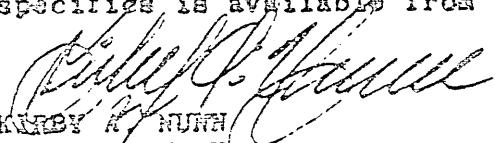
1. This memo contains the following:

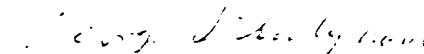
a. History of "Falling Leaves" (Attachment 1).

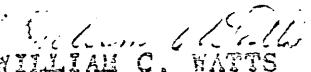
b. General Statements (Attachment 2).

c. Critique results of the debriefing of each of the senior TDY operations officers from Moorestown, Laredo, and Thomasville (Attachment 3).

2. In addition, a written report from each site outlining specifics is available from 90DC.

  
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1. History of "Falling Leaves,"  
2. General Statements  
3. Critiques, Moorestown,  
Laredo, and Thomasville

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HISTORY OF "FALLING LEAVES"

1. The "Falling Leaves" project was implemented as a result of President Kennedy's address to the Nation on 22 Oct 62.
2. The Commander, 9ADD, directed his staff to explore the feasibility and possible utilization of SPACETRACK facilities against the Cuban IRBM/HRBM threat.
3. On 23 Oct, the Commander, 9ADD, directed his staff to prepare a presentation for Gen Jensen. Also on 23 Oct, ADC received a telephone request from USAF establishing a requirement for information on the possible utilization of the Moorestown, Laredo, and Trinidad facilities against the Cuban ballistic missile threat. ADC requested that 9ADD provide feasibility studies and concepts of operation for using the Moorestown sensor and other available facilities against the Cuban threat.
4. In response to the above request, a letter and briefing were presented by 9ADD Commander to DCS Operations, ADC, at 1330Z, 24 Oct 62.
5. At 1815Z, 24 Oct, as a result of telephone calls from USAF, the Moorestown tracker was turned south and went to a 24-hour surveillance operation.
6. The first message from ADC to Chief of Staff, Air Force, SECRETNOFORN ADC/CP 2844, dated 24 Oct 62, established the feasibility and concept of employment for Moorestown and other U.S. sensors in this missile warning function.
7. The first operational instructions provided to Moorestown quoted a USAF message, SECRETNOFORNEX CANADA AFQOP-CP 93086. DCD requested a priority be applied to detection of IRBM's launched from Cuba. 9CCR message 029 SECRETNOFORNEX CANADA provided initial operating instructions for the Moorestown facility. 9CDC message 114/62, dated 25 Oct 62, provided operational instructions and procedures for Moorestown, SPACETRACK and CCRDF.
8. Initial planning for the training of temporary-duty personnel was undertaken at this time. Personnel for operation at the Moorestown facility were to be trained on 28-29 Oct, and in place on 30 Oct for operations of the Moorestown tracker. Additional training programs were established to incorporate complete training for personnel assigned to the Laredo and Fairbanks facilities.

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9. 90DC message 116/62 SECRETNOFORNEX CANADA, dated 28 Oct, was forwarded to Moorestown. The message contained operational instructions and procedures for Moorestown, SPACETRACK and CCDF. This encompassed the automatic operation of the Moorestown facility utilizing their tactical computer program pertaining to the detection, discrimination and impact prediction of IRBM's and MRBM's.

10. Upon receipt of ADC concurrence in the proposal and use of the Laredo facility, 90DC message 118/62, subject: Operational Instructions and Procedures for Laredo, was issued on 28 Oct 62. Included in this message, prior to actions of 28 Oct 62, ADC advised this headquarters by their message SECRETNOFORNEX CANADA ADOOP-E1 2890, dated 26 Oct 62, that special sensor equipment for the AN/FPS-35 Radar at Thomasville AFS, Alabama, would be included in the "Falling Leaves" net. Col Waltz and a team of officers from SADD departed on 27 Oct to brief the 32 Air Div Commander and the Thomasville AFS Commander and operations personnel. This message established a tentative operations date of 29 Oct.

11. The first personnel were trained for the Thomasville facility on 28 and 29 Oct and transported to be in place on 29 Oct. 90DC message 122/62, dated 29 Oct 62, provided the operational instructions and procedures for Thomasville AFS.

12. ADC message ADOOP-ES 2838, subject: (U) Expansion of Moorestown Radar Coverage, was received on 29 Oct. This expansion provided for a 60-degree scan to increase the coverage of the Cuban effort.

13. On 1 Nov 62, ADC in their message ADOOP-ES 3004 directed expansion of coverage of the Moorestown tracker facility in support of "Falling Leaves." This increase in coverage expanded the launch areas to include all the sea areas south and north of Cuba that were within the current established azimuth limits.

14. For a remainder of the "Falling Leaves" exercise, numerous procedural changes were developed to provide increased capabilities within the system. As an example, launch information on USAF orbital and sub-orbital flights was provided. The launch information and count down were necessary to prevent false reports of uncorrelated targets or small game reports appearing in the area of coverage. Additionally, these count downs provided a positive check of the system.

15. During the next 15 days numerous steps were taken to clean up and modify the operation to provide the best possible data for NORAD use.

16. During the week of 19-23 Nov, numerous briefings were conducted to resolve the status of the "Falling Leaves" effort in the face of a lessening threat. On 23 Nov, Col Waltz presented a briefing to Gen Lee recommending a change in status of the Moorestown and Laredo facilities.

17. On 28 Nov, based upon a phone call from ADC, Col Lund advised Moorestown that they would be on a 15-minute recall for the "Falling Leaves" project, and to concentrate on the SPACETRACK effort during their normal operating shifts. At this time, Laredo was removed from the "Falling Leaves" effort and Thomasville was retained on the project until further notice. This ADC phone call from Maj Garcia to Col Lund was not followed up by message. The follow-up message was withheld pending a DOD decision to terminate the "Falling Leaves" effort.

18. On 30 Nov, ADOOP-ES message 3326, subject: (U) Operation of Moorestown Tracker Facility, was forwarded to this headquarters. This message confirmed action of 23 Nov, placing the Moorestown facility on a 24-hour per day operation in the SPACETRACK effort and retaining a 15-minute recall capability for "Falling Leaves."

19. On 6 Dec, SADD received a SECRETNOFORW message ADOOP-ES 3373, subject: (U) "Falling Leaves." This message directed that immediate action be taken to discontinue the "Falling Leaves" system and to return all sensors to their original missions. All sensors were advised by telephone upon receipt. DODC message 133/62 SECRET, referencing the above, cited ADC message terminating the "Falling Leaves" operation. All personnel were immediately relieved by authority of CINCHORAD and directed to return to their permanent duty stations. All equipment associated with "Falling Leaves" was to return to usual configuration and/or to original organizations. Sites were to return to their original missions.

## GENERAL STATEMENTS

1. It must be understood that the entire "Falling Leaves" effort was a crash program using existing radar equipment, not specifically designed to detect ballistic missiles launched from the Cuban land mass.
2. Probabilities of detecting missiles from various Cuban launch angles varied from 0 to 95 per cent for each radar site.
3. The attached critique reports, per se, present an over optimistic evaluation of the system capability, and therefore, should be considered in the context of the above facts.

## DEBRIEFING OF "FALLING LEAVES"

### MOORESTOWN

Lt Col Allen, senior TDY SSSO at Moorestown for "Falling Leaves," presented a briefing on the Moorestown operation.

#### GENERAL COMMENTS:

1. The part played by Moorestown in project "Falling Leaves" was instrumental in providing the capability for detecting missiles launched from Cuba.
2. The Moorestown sensor site satisfactorily performed its assigned mission; however, major equipment failures were encountered in the antenna support structure.
3. All military and civilian personnel associated with the Moorestown complex should be commended for superior performance.

#### PROBLEM AREAS:

1. Programming of the 7090 computer to conform to the threat and subsequent checkout required considerable time and test prior to finalization.
2. Lack of prior experience in this type of operation and the limited available time to establish the "Falling Leaves" project lead to a lack of technical and operational guidance, specifically:
  - a. No standard for operability criteris for radar transmitters.
  - b. No 9 Aerospace Def Div CPI designated to coordinate operational matters with Moorestown.
3. Friendly launch information and count down was not available on a timely basis.
4. ... The CC&DF "Falling Leaves" duty officers did not receive a complete system indoctrination.
5. ADC and BPO issued conflicting mission directives which resulted in confusion. This conflict occurred when the site was placed on 15-minute recall for the "Falling Leaves" mission.

6. Equipment failures were encountered in the following areas:

a. Antenna support failure and subsequent inspection was the major contributor to red time.

b. Intermittent transmitter failure caused by overloading circuit breakers was the second most important contributor to red time. (Most transmitter failures were of short duration.)

CONCLUSION:

1. That the Moorestown facility did provide an acceptable detection capability against the Cuban missile threat.

2. Experience gained from "Falling Leaves" could possibly be applied against the SLBM threat.

RECOMMENDATIONS:

1. That the "Falling Leaves" computer program be maintained at Moorestown for an immediate response.

2. ) That standards for radar transmitter operability be established by SADD.

3. That future operation plans designate a SADD headquarters OPI for centralized control.

4. ) That a procedure be established to allow an immediate "on-call" reaction for launch and final count-down information, be provided all sensors.

5. That all personnel associated with "falling leaves" future operations receive a complete indoctrination and system orientation prior to engaging in the operation.

6. That ADC invovcate the problem of conflicting mission directives.

7. That the proposed SLBM emergency action plan reflect Moorestown's capability and operational limitations.

8. That personnel assigned to the SSSO position be of 1744 level of experience or higher.

## DEBRIEFING OF "FALLING LEAVES"

### LAREDO

Maj Glenn, one of the TDY SSSO's at Laredo for "Falling Leaves," presented a briefing on the Laredo operation.

#### GENERAL COMMENTS:

1. The Laredo sensor site performed its "Falling Leaves" mission in a satisfactory manner.
2. Based upon known capability of the site, "small game" sightings which were not tracked required verification by Moorestown, since Laredo's sightings alone afforded a low credence value to the over-all system.
3. Due to the normal mission of Laredo, contractor experience in the area of ballistic missiles was very limited. There was considerable doubt as to the adequacy of scope interpretation during periods of real-time display (RTD) degradation.

#### PROBLEM AREAS:

1. The real-time display equipment, shipped from the Shemya sensor site for the "Falling Leaves" mission, experienced several outages caused by a lack of spare parts and maintenance instructions.
2. There is no provision for performing dynamic target tests on the system. Therefore, system degradation could have been present without knowledge of the operating crew.
3. The SSSO did not exercise operational control over the contractor crew.
4. Since the Laredo sensor site has been assigned to 9ADD, the system has never had the opportunity to prove its capability to acquire and track a missile.
5. The position manned by the SSSO was not commensurate with their rank, AFSC and experience.
6. Contractor crews were apparently not fully briefed on the over-all "Falling Leaves" operation, especially the duties of the SSSO.

CONCLUSION: That the Laredo sensor provided a limited ballistic missile detection capability (not verified) to project "Falling Leaves."

RECOMMENDATIONS:

1. That adequate spare parts and operating and maintenance instructions be provided to support the RTD equipment.
2. That the lack of dynamic testing be examined by the contractor to determine what, if any, degree of degradation is suffered.
3. That on future exercises of this type the site commander will insure that the TDY operations personnel have full authority to act for the site commander in regards to operational problems.
4. That personnel assigned to the SSSC position be of 1744 level of experience or higher.
5. That contractor crews be fully briefed on over-all mission operation and military responsibility regarding operational control.
6. That the Laredo sensor site be tasked immediately to observe, acquire and track friendly missiles within their area to determine their capability to track and predict impact.

## DEBRIEFING OF "FALLING LEAVES"

### THOMASVILLE

Lt Col Gordon, the OIC of "Falling Leaves" at Thomasville, presented a briefing to members of the 9ADD staff at 0830 hours, 18 Jan 62, on the site's efforts in the "Falling Leaves" mission.

#### GENERAL COMMENTS:

1. The Thomasville sensor site performed its "Falling Leaves" mission in a satisfactory manner.
2. All military and civilian personnel at Thomasville are to be commended for superior performance.
3. The Thomasville facility was rapidly modified from an AC&W test configuration to afford a missile surveillance and detection capability of Cuban launches.

#### PROBLEM AREAS:

1. There was not a qualified maintenance officer assigned to the site.
2. Since the AN/FPS-35 facility was a prototype without an ADC surveillance mission and since special equipment was required for modification of the radar, numerous cutages attributable to a lack of spare parts and documented maintenance instructions were encountered.
3. The ADC V-34 document reflected erroneous coordinates for the station which resulted in correlation errors of known satellite penetrations.
4. On-line crypto facilities were not available for immediate use at the Thomasville site. As a result, classified "Falling Leaves" traffic encountered unacceptable delays between transmission and reception.

#### CONCLUSIONS:

1. The Thomasville sensor provided a surveillance and limited warning capability to project "Falling Leaves."
2. Based upon debriefing and written report from Thomasville, it appears that the AN/FPS-35 with further modification could provide a limited SLBM detection capability.

RECOMMENDATIONS:

1. That should a similar mission be assigned Thomasville, a Radar Maintenance Officer, AFSC 3016, should be assigned to supervise radar maintenance.
2. That HQ 9ADD, in support of stated requirements, request approval for an immediate go ahead to test further modifications of the radar to determine the feasibility of using the AN/FPS-35 to detect SLBM's.
3. ) That the operating command insure that adequate communication facilities, including on-line crypto, exist prior to activation of the facility for a "Falling Leaves" type mission.